

WHAT IS CLAIMED IS:

1. A fluid injection nozzle comprising:

a valve body providing a valve seat on an inner surface, said inner surface defining a fluid passage whose cross-sectional area decreases toward a downstream side;

5 a valve member for cooperating with said valve seat to open and close said fluid passage; and

10 a plate disposed on a downstream side of said fluid passage, said plate defining a plurality of through holes for injecting fluid, said plate providing a chamber just above said through holes,

15 wherein said chamber is defined by an approximately flat surface of said plate and extends substantially parallel with said plate, and wherein said chamber is larger than a downstream end opening of said inner surface of said valve body, and wherein said through hole has an inlet opening at an area outside a projected area of said downstream end opening in an axial direction,

20 wherein said chamber extends beyond said through hole by more than a diameter of said through hole,

 wherein an imaginary line along said inner surface of said valve body directly crosses said plate at a crossing point, and

 wherein said through holes are radially disposed having a displacement with respect to the crossing point.

2. A fluid injection nozzle comprising:

25 a valve body providing a valve seat on an inner surface, said inner surface defining a fluid passage whose cross-sectional area is decreased toward a downstream side;

a valve member for cooperating with said valve seat to open and close said fluid passage; and

a plate disposed on a downstream side of said fluid passage, said plate having a plurality of through holes for injecting fluid,

5 wherein said plate is located at a far end of a downstream direction of the fluid injection nozzle,

wherein said plate defines a chamber just above said through holes, wherein said chamber is defined by a flat surface of said plate and extends substantially parallel to said plate, and wherein said 10 chamber is larger than a downstream end opening of said inner surface of said valve body, and wherein said through hole has an inlet opening at an area outside a projected area of said downstream end opening in an axial direction, and

wherein said valve body defines a depression at its downstream 15 end for defining said chamber, and said inlet of said through hole faces a bottom surface of said depression.

3. A fluid injection nozzle comprising:

a valve body providing a valve seat on an inner surface, said 20 inner surface defining a fluid passage whose cross-sectional area is decreased in a downstream direction;

a valve member for cooperating with said valve seat to open and close said fluid passage; and

a plate disposed on a downstream side of said fluid passage, 25 said plate defining a plurality of through holes for injecting fluid,

said plate defining a chamber just above said through holes, wherein said chamber is defined by an approximately flat surface of said

plate and extends substantially parallel with said plate, and wherein
said chamber is larger than a downstream end opening of said inner
surface of said valve body, and wherein said through hole has an inlet
opened at an area outside a projected area of said downstream end opening
5 in an axial direction, and

wherein said valve body has a depression at its downstream end
for defining said chamber, and said inlet of said through hole faces a
bottom surface of said depression, wherein the bottom surface of said
depression extends substantially parallel with said plate.

10

4. A fluid injection nozzle according to claim 1, wherein said
plate is fixed to the valve body.

15 5. A fluid injection nozzle according to claim 2, wherein said
plate is fixed to the valve body.

6. A fluid injection nozzle according to claim 3, wherein said
plate is fixed to the valve body.

20 7. A fluid injection nozzle according to claim 1, wherein said
through hole has a round cross-sectional shape.

8. A fluid injection nozzle according to claim 2, wherein said
through hole has a round cross-sectional shape.

25

9. A fluid injection nozzle according to claim 3, wherein said
through hole has a round cross-sectional shape.